Onchycobacter anthropi Pyomyositis in Immunocompetent Patient: Case Report

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Learning Point of the Article:

O. anthropi is an emerging pathogen and there is an increase in the frequency of orthopaedic infection, this report suggests the ability of Onchycobacter anthropi to cause pyomyositis in immunocompetent patients.

Abstract

Introduction: Ochrobactrum anthropi is an unusual low virulence emerging pathogen that rarely causes orthopedic infection and its clinical picture is not well described. It usually causes infection in immunocompromised hosts with indwelling catheters or foreign bodies, such as the central venous catheters.

Case Report: We reported a case of O. anthropi pyomyositis in a 22-year-old immunocompetent male patient not on any invasive procedure presented with raised temperature, left shoulder pain, and restriction of movements. Diagnosis was confirmed with the help of MRI and biopsy. He was successfully managed with surgical debridement and appropriate antibiotics.

Conclusion: Our case highlights the ability of O. anthropi to cause pyomyositis in immunocompetent individuals and its relevance in the field of orthopaedic infection.

Keywords: Ochrobactrum anthropi, pyomyositis, immunocompetent host.

Introduction

Onchycobacter anthropi is a Gram-negative bacilli rarely implicated as human pathogen. This infection has been described in renal dialysis patients and immunocompromised individuals. We report a case of successfully treated O. anthropi pyomyositis in a 22-year-old immunocompetent patient.

Case Report

A 22-year-old male presented to medicine OPD with a history of fever and body pain for 20 days duration. Fever was high grade and intermittent with chills. He also complained of the left shoulder pain and restriction of the left shoulder movements. Pain was insidious in onset, gradually progressive, non-radiating, aggravated on the left shoulder movements, and no relieving factor. On examination, his left shoulder warm, tender joint, was noted with severe restriction of shoulder movements. Laboratory finding shows white blood cell count of 5600. Blood culture was sent and the left shoulder MRI was done. He was started empirically on intravenous cefoperazone-sulbactam but he continued to have persistent high-grade fever (103 F).

MRI shows ill-defined diffuse edema with peripheral enhancing collection involving all the rotator cuff muscles, teres major, latissimus dorsi, coracobrachialis and deltoid muscles with provisional diagnosis of pyomyositis with abscess (Fig. 1). MRI also shows marrow edema with patchy enhancement of glenoid, coracoid process, spine of scapula, distal end of clavicle, and acromion suggestive of osteomyelitis (Fig. 2).

He was planned for surgical debridement. Surgical debridement was done and frank pus was evacuated. Tissue and pus were taken for biopsy, Genexpert MTB/RIF, Gram staining, and culture-

Access this article online

Website: www.jocr.co.in

DOI: 10.13107/jocr.2022.v12.i03.2700

Author's Photo Gallery

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Submitted: 14/10/2021; Review: 21/12/2021; Accepted: February 2022; Published: March 2022

DOI:10.13107/jocr.2022.v12.i03.2700

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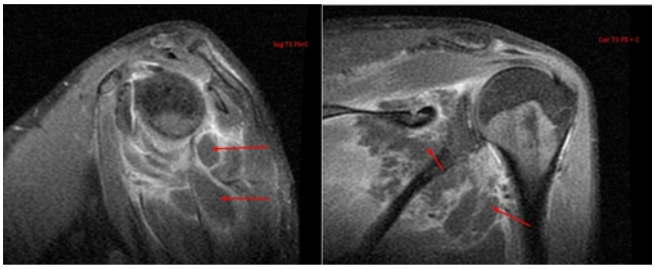

Figure 1: MRI showing ill-defined diffuse edema with peripheral enhancing collections noted involving all the rotator cuff muscles teres major, latissimus dorsi, coracobrachialis, and deltoid muscles.

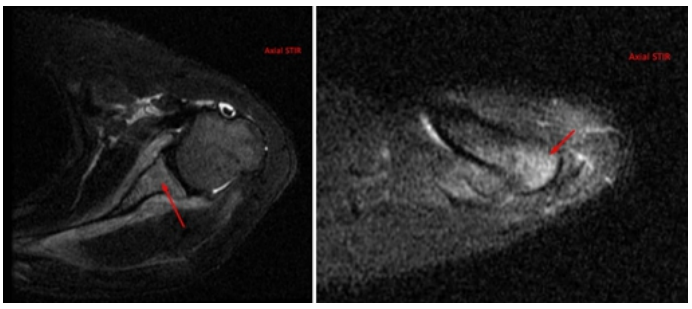

Figure 2: MRI showing edema in glenoid and distal end of clavicle.

sensitivity. Biopsy confirms pyomyositis (Fig. 3). Genexpert came out to be negative. Direct smear – Gram stain shows Gram-positive cocci in pairs. Organisms isolated in blood and pus culture-sensitivity as Ochrobactrum anthropi showing susceptibility testing of the organism to be sensitive to cotrimoxazole, imipenem, meropenem, tetracycline, tigecycline, piperacillin-tazobactam and resistance to amikacin, cefotaxime, ciprofloxacin, ceftazidime, cefepime, gentamicin, and levofloxacin.

He was started on intravenous cotrimoxazole and meropenem. He had an uneventful recovery.

Discussion

As previously classified as CDC group versus the genus Ochrobactrum and its type species, O. anthropi is aerobic, Gram-negative, oxidase-positive, urease-positive, motile, and non-lactose fermenting bacilli that rarely cause human infections because of its low pathogenic potential [1]. It grows in agar culture forming pale yellow colonies hence grouped under genus Ochrobactrum. In Greek "ochros" meaning pale yellow [1, 2]. Genus Ochrobactrum currently comprises nine species with only three species, O. anthropi, O. intermedium, and O. pseudintermedius that have been reported to cause clinical infection [3].

Immunocompromised patients with indwelling catheters, retained foreign bodies, surgical procedure with allograft, and traumatic wounds are prone to O. anthropi infections [4, 5]. The common mode of infection in this organism is due to inoculation or traumatic spread. In our report, the patient was not immunocompromised and was not on any invasive procedure or trauma and the reason for pyomyositis must be hematogenous dissemination due to secondary bacteremia which patient might have colonized the organism somewhere in his body, such as intestine or throat leading to translocation of bacteria across mucous membranes [1].

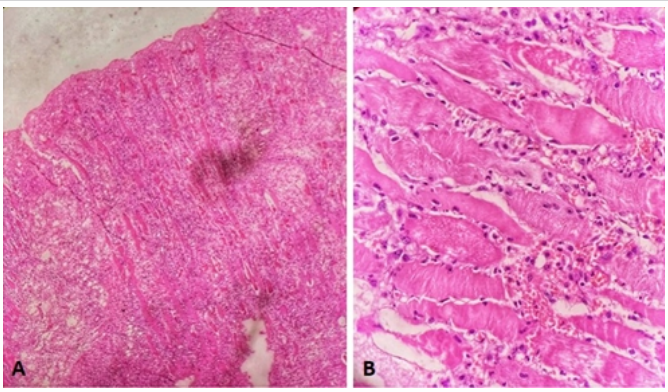

Figure 3: (a) Low power view showing cut section of muscles fibers with inflammatory infiltrates. (b) High power view showing longitudinally arranged cut section of muscles fibers showing many lymphocytes between the muscles fibers.

Recently, O. anthropi is becoming increasingly problematic with potential to cause opportunistic, nosocomial infection, and even reports suggesting infection in immunocompetent hosts [2, 6, 7]. Cases of fatal septic shock caused by O. anthropi in immunocompetent adults have also been reported [7]. Most reported cases of infection in humans are associated with the central venous catheter line infection due to its ability to adhere to various synthetic material such as silicone tubing [2, 4, 5, 8]. The previous studies have shown uneventful recovery and clinical cure without any long-term sequelae with O. anthropi infection in immunocompetent patients [6, 9].

O. anthropi has been isolated from blood, feces, urine, indwelling catheter, oral cavities, bile, and vaginal secretion [10]. O. anthropi shares the same environmental microbial niche similar to pseudomonas species and also hase close biochemical resemblance. There had been difficulty in differentiating Ochrobactrum spp. from other organisms by physiological test because of high phenotypic similarity [11]. There have been reports of misidentification of Brucella sap. as O. anthropi, which can occur with some automated systems such as API 20NE as they are closely related. Hence, confirmation with negative serum Brucella spp. antibodies is sometimes recommended in case of severe disease primarily manifested as O. anthropi bacteremia with no obvious focus of infection and refractory to standard treatment [12].

The treatment of this infection is challenging as the organism is resistant to amoxicillin-clavulanate, piperacillin-tazobactam, cefotaxime, ceftriaxone, and aztreonam. In general, the organism is susceptible to gentamicin, fluoroquinolones (ciprofloxacin and levofloxacin), carbapenems, and trimethoprim-sulfamethoxazole [2]. There has been rising

concern due to its resistance to various -lactems which is commonly employed as empirical antimicrobial therapy [6, 7]. Our isolate shows atypical pattern of antibiotic susceptibility showing resistance to gentamicin, levofloxacin, and ciprofloxacin. We treated him with intravenous cotrimoxazole and meropenem.

In summary, O. anthropi causes infection in immunocompromised individuals with indwelling catheters and grows on foreign bodies. We had a unique case with purulent infection of skeletal muscles caused by O. anthropi in an immunocompetent patient without any indwelling catheter, foreign body, or contaminated solution exposure with atypical antibiotic susceptibility. Thereby, our report expands the spectrum of O. anthropi infection in humans. Our report suggested the possibility of infection and ability to cause pyomyositis in immunocompetent individuals without any invasive procedure or trauma. Our case highlights the possibility of O. anthropi as an emerging pathogen even in immunocompetent individuals and rising challenges faced during treatment due to its resistance to various antimicrobial therapy.

Conclusion

O. anthropi is an emerging pathogen even in immunocompetent patients and there may be an increase in the frequency of orthopedic infection caused by these organisms. This report suggests the ability of O. anthropi to cause pyomyositis in immunocompetent patients. Surgical debridement and treatment with appropriate antibiotics will produce successful results.

Clinical Message

This case report underlines the importance of diagnosing pathology causing Onchycobacter anthropi pyomyositis in immunocompetent patients and it's management. It should be kept in mind that an immunocompetent host does not rule out the Onchycobacter anthropi infection as previously thought.

Declaration of patient consent : The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient's parents have given their consent for patient images and other clinical information to be reported in the journal. The patient's parents understand that his names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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Conflict of Interest: Nil
Source of Support: Nil

Consent: The authors confirm that informed consent was obtained from the patient for publication of this case report

How to Cite this Article

Loganathan S, Qamar A, Umashankar T, Dhanarajan GR. Onchycobacter anthropi Pyomyositis in Immunocompetent Patient: Case Report. Journal of Orthopaedic Case Reports 2022 March;12(3):22-24.